

ABSTRACT OF DISCLOSURE

A magnetron includes a ring-shaped anode, a cathode, an activating space, at least one permanent magnet and a magnetic flux carrying unit. The ring-shaped anode forms a plurality of resonance circuits. The cathode is disposed at the axial center of the anode to emit thermions. The activating space is formed between the anode and the cathode. The at least one permanent magnet is provided beside the anode. The magnetic flux carrying unit carries magnetic flux generated by the at least one permanent magnet to the activating space. A microwave oven and/or high frequency heating apparatus may utilize the magnetron.